

EXHIBIT 12

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner,

v.

SINGULAR COMPUTING LLC,
Patent Owner.

Case No. TBD
Patent No. 8,407,273

DECLARATION OF RICHARD GOODIN

Google Exhibit 1003 Google v. Singular

55. Along similar lines, the “operation” the execution unit performs includes not only relatively simple arithmetic operations (’273 patent, 11:44-48 (“addition, multiplication, subtraction, and division”)), but also more complex operations such as “trigonometric functions” (*id.*, 27:33-39) and even “non-linear operations such as exponentiation” (*id.*, 1:65).

56. Additionally, the claims expressly cover *non-deterministic* implementations, *i.e.*, execution units that produce different results for different executions of the same operation on the same input. All of the challenged independent claims recite “repeated execution” of the operation on “that same input” and taking a “statistical mean” (which a POSA would have understood is an average) of the output numerical values. *See* claims 1, 33, 36, and 68. As I explain in paragraphs 57-60 below, a POSA would have understood that the claims expressly cover non-deterministic embodiments via the recited “statistical mean” provisions.

57. The specification says some embodiments (*e.g.*, analog embodiments) are non-deterministic. In discussing the prior art, the patent describes prior art “[a]rray processors” that “use analog representations of numbers and analog circuits to perform computations,” and states that the “**SCAMP**” computer “is such a machine.” ’273 patent, 4:7-9. The patent notes that “[t]hese machines...introduce noise into their computations, so the computations are not